Department of Electrical and Computer Engineering

Title: Early identification of Low-Grade Acute Radiation Dermatitis using *In Vivo* Optical Coherence Tomography (OCT) images of human head and neck

Christos Photiou

Wednesday 8 of March, 2023, 17:00 - 18:00

Room: XOD02-013

Abstract: Radiation therapy remains an essential component of cancer treatment, with nearly 50% of cancer patients receiving radiation therapy at some point during the course of their illness. Of those, as many as 90-95% may experience some form of acute radiation dermatitis (ARD) or radiation-induced skin injury. ARD results in significant discomfort, restriction of daily activities, overall decrease in the quality of life and even cessation of the necessary radiation therapy with detrimental survival effects. Unfortunately, research into the causes and possible management strategies for ARD is hindered by the lack of biomarkers for the quantitative assessment of the early changes associated with the condition. In this study, *In Vivo* head and neck OCT images, from patients undergoing radiation therapy, were collected during the course of their treatment and evaluated using a fully automated algorithm for image segmentation and feature extraction. Machine learning classifiers were utilized to differentiate normal skin from early ARD with promising results.

Biography: **Dr. Christos Photiou** has received his B.Sc. degree in Physics from the University Patras and his M.Sc. in Environmental Health from the Cyprus University of Technology in association with Harvard school of Public Health. He completed his PhD degree in 2020 in the Department of Electrical and Computer Engineering at the University of Cyprus. As a researcher at KIOS Center of Excellence of the University of Cyprus his main research interests include biomedical image processing, machine learning and optical diagnostics. He has developed several novel methods for feature extraction using Optical Coherence Tomography (OCT) images that can be used in the diagnosis of serious diseases such as cancer.